

100

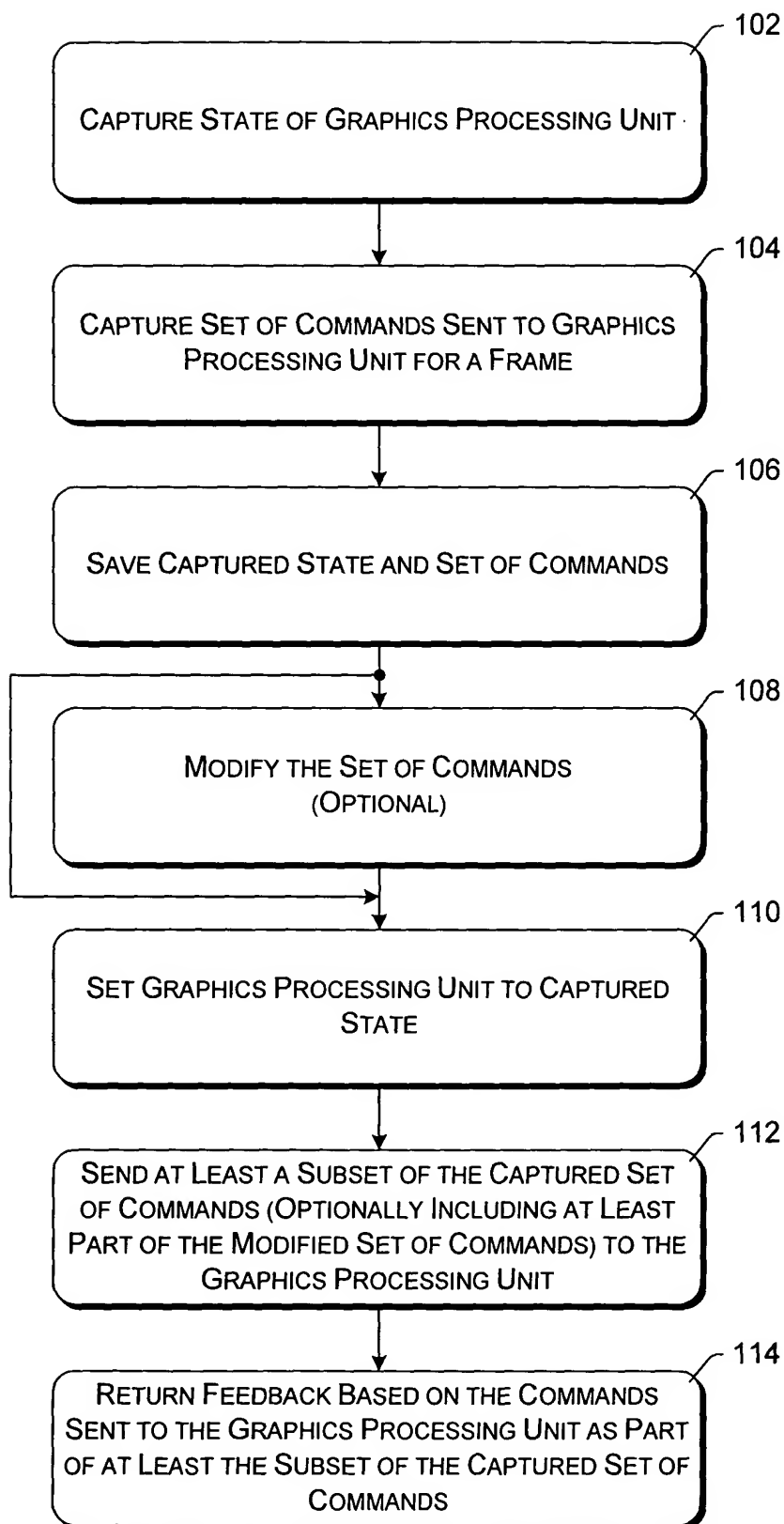


Fig. 1

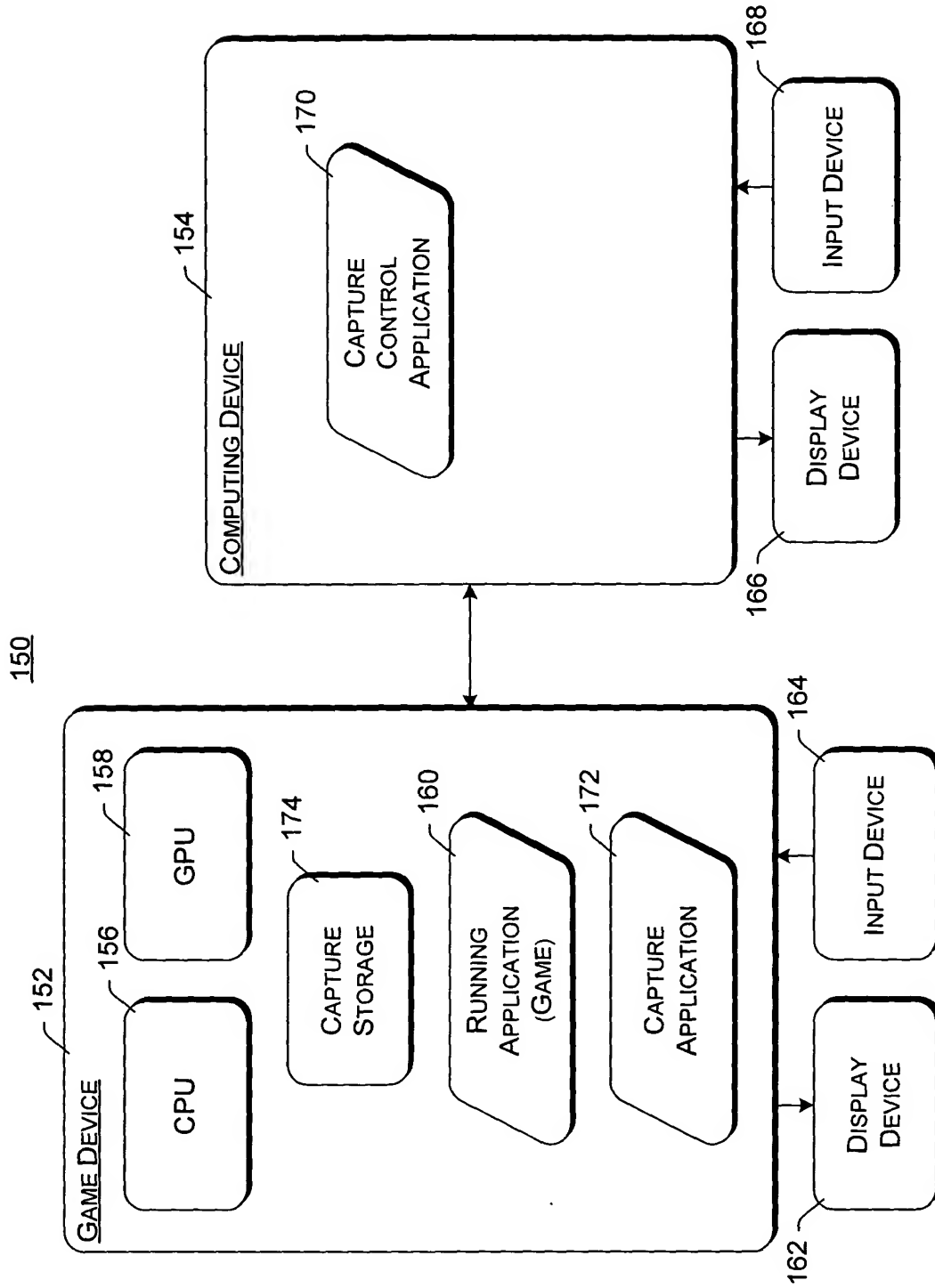
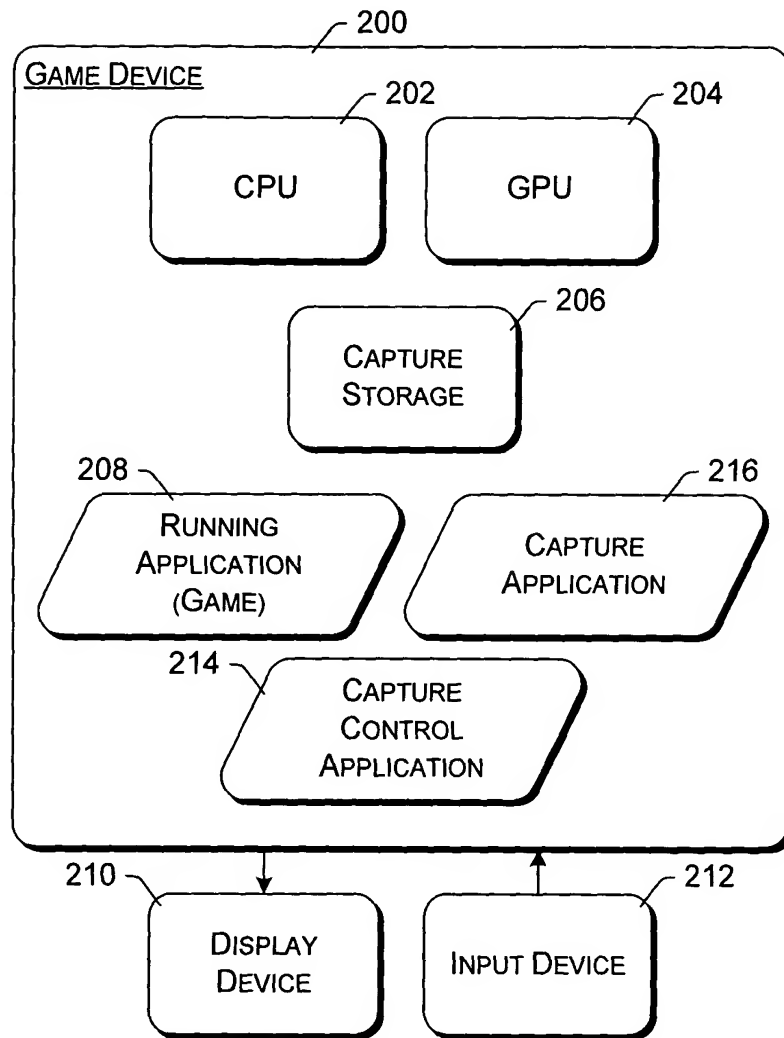


Fig. 2



*Fig. 3*

240

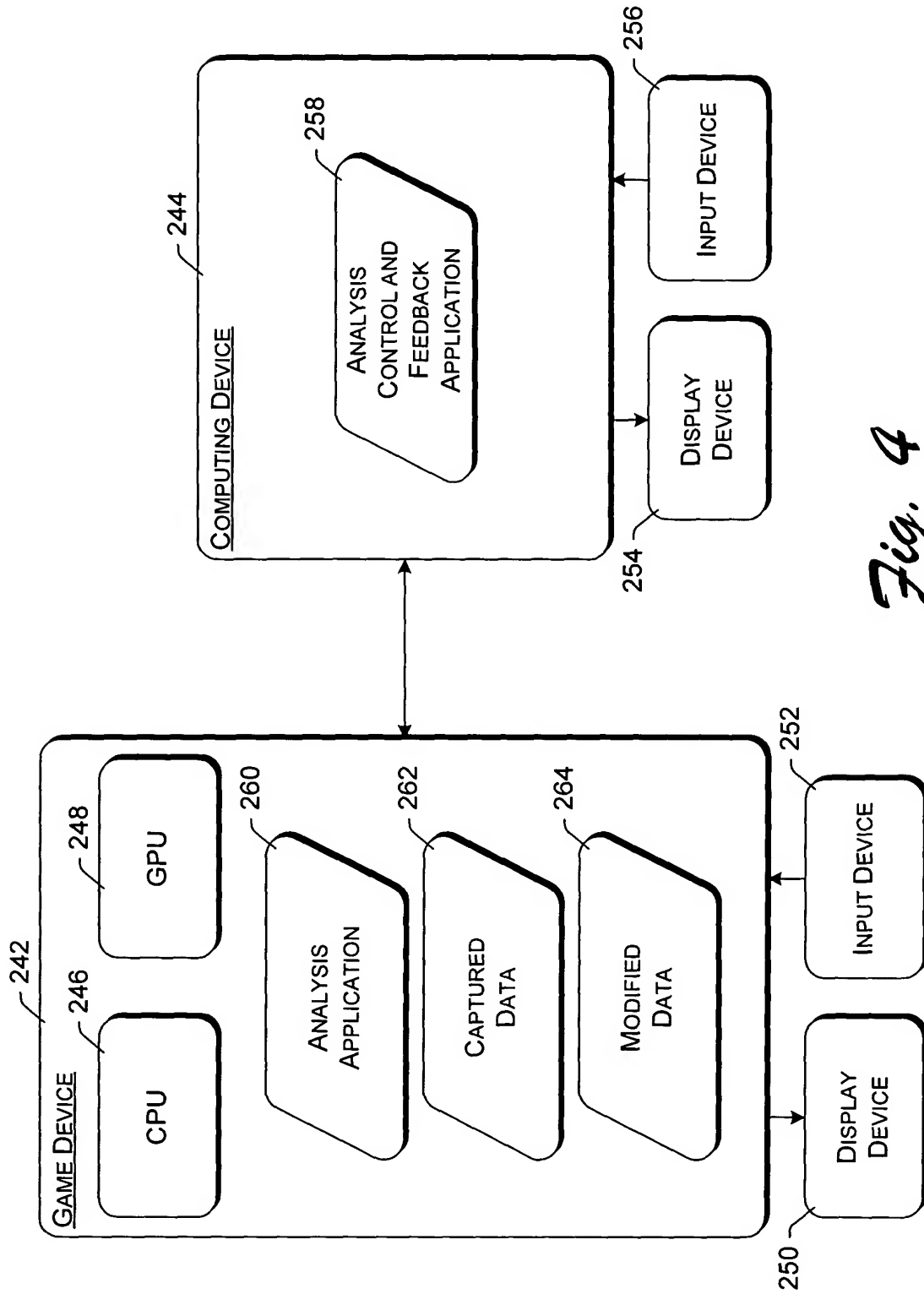
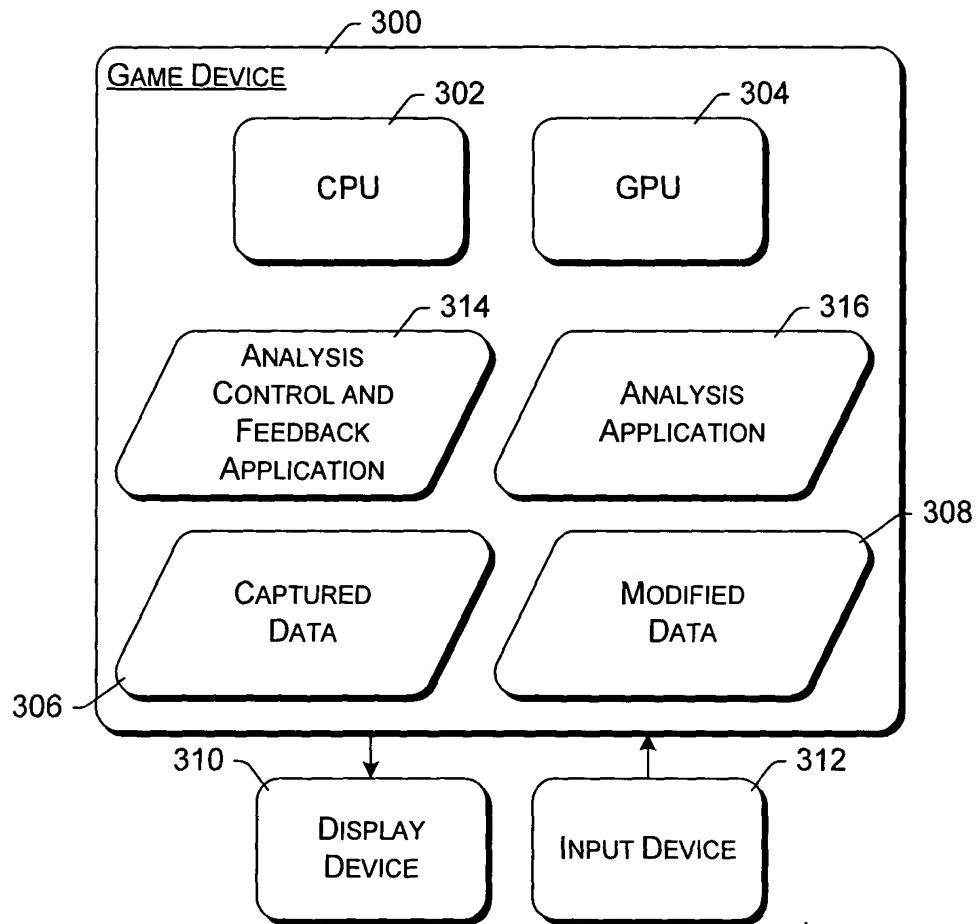


Fig. 4



*Fig. 5*

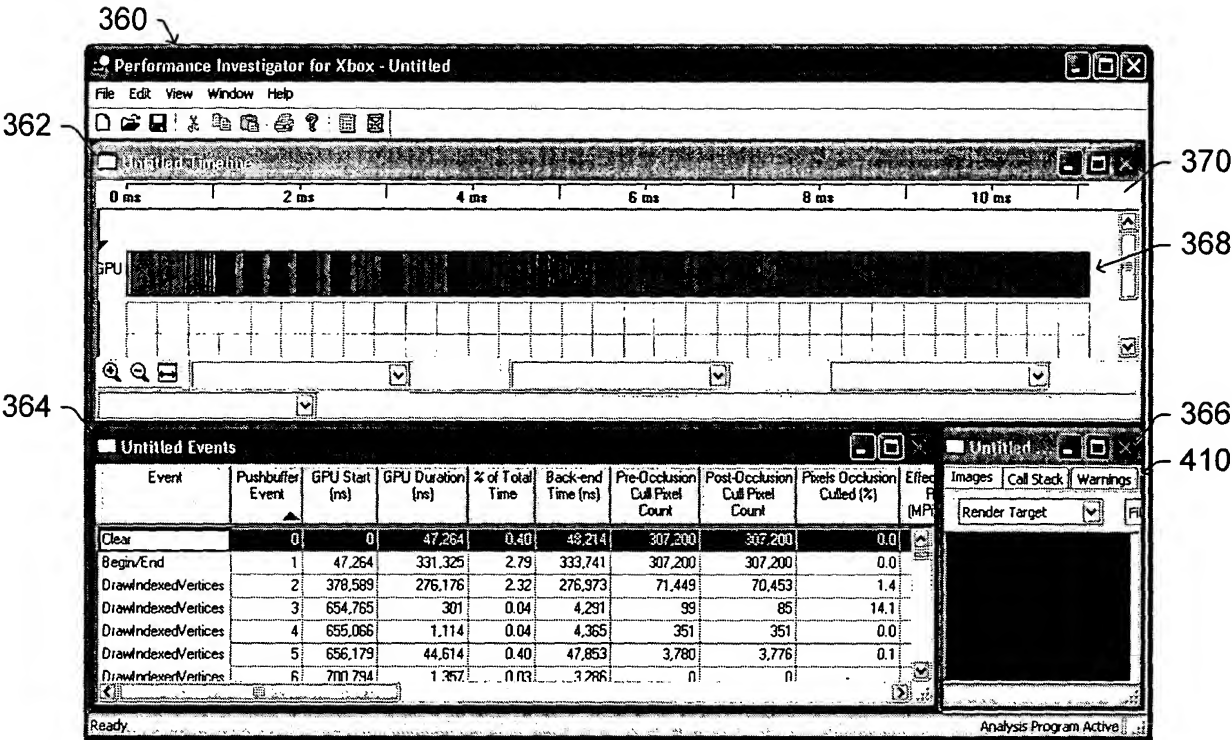


Fig. 7

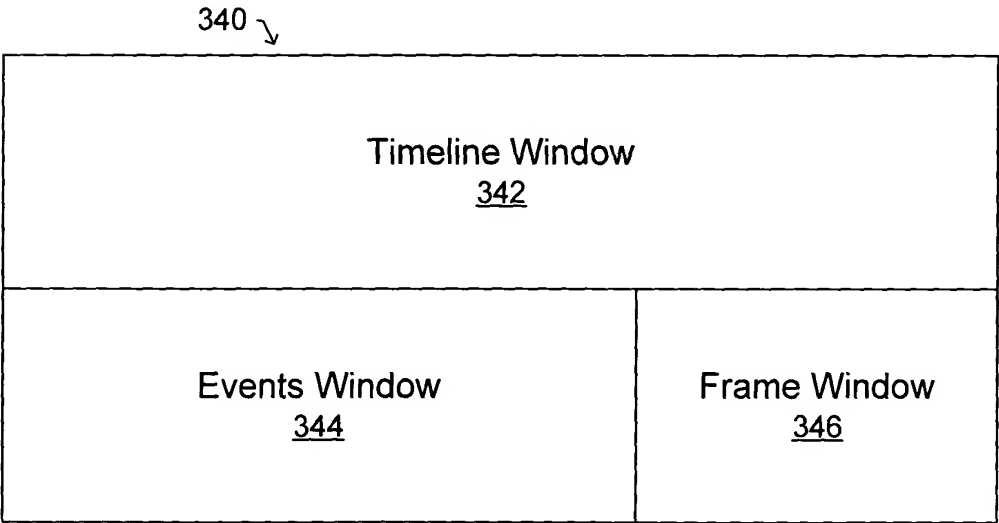


Fig. 6

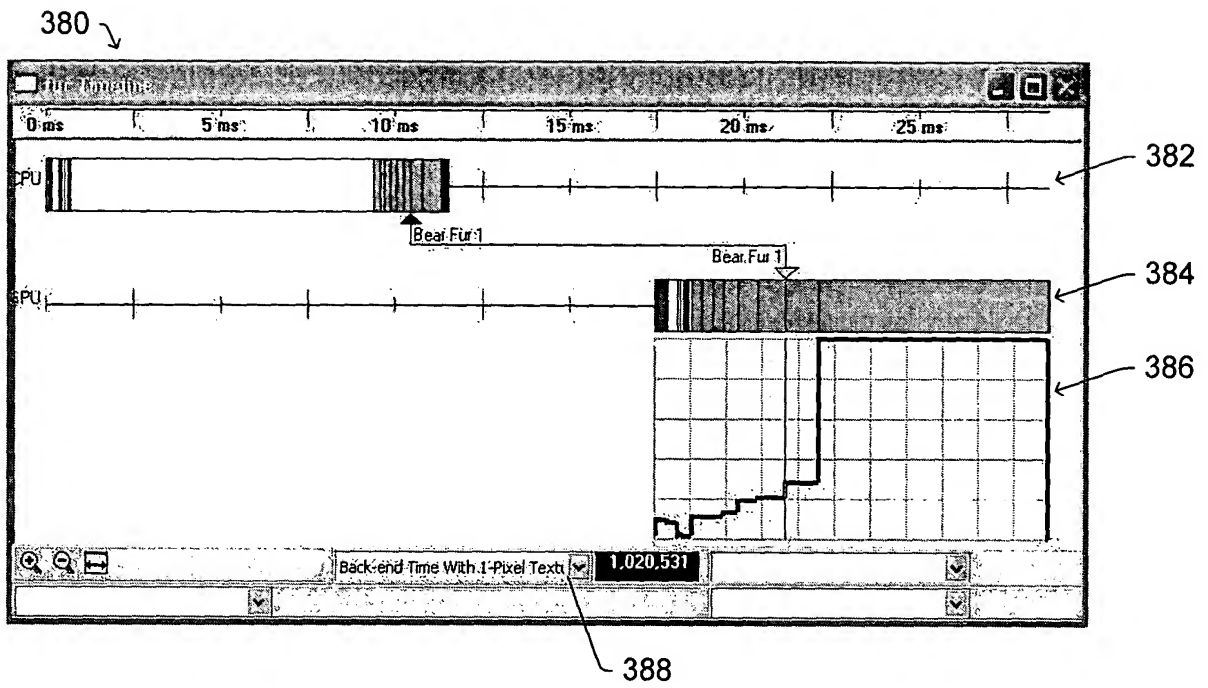


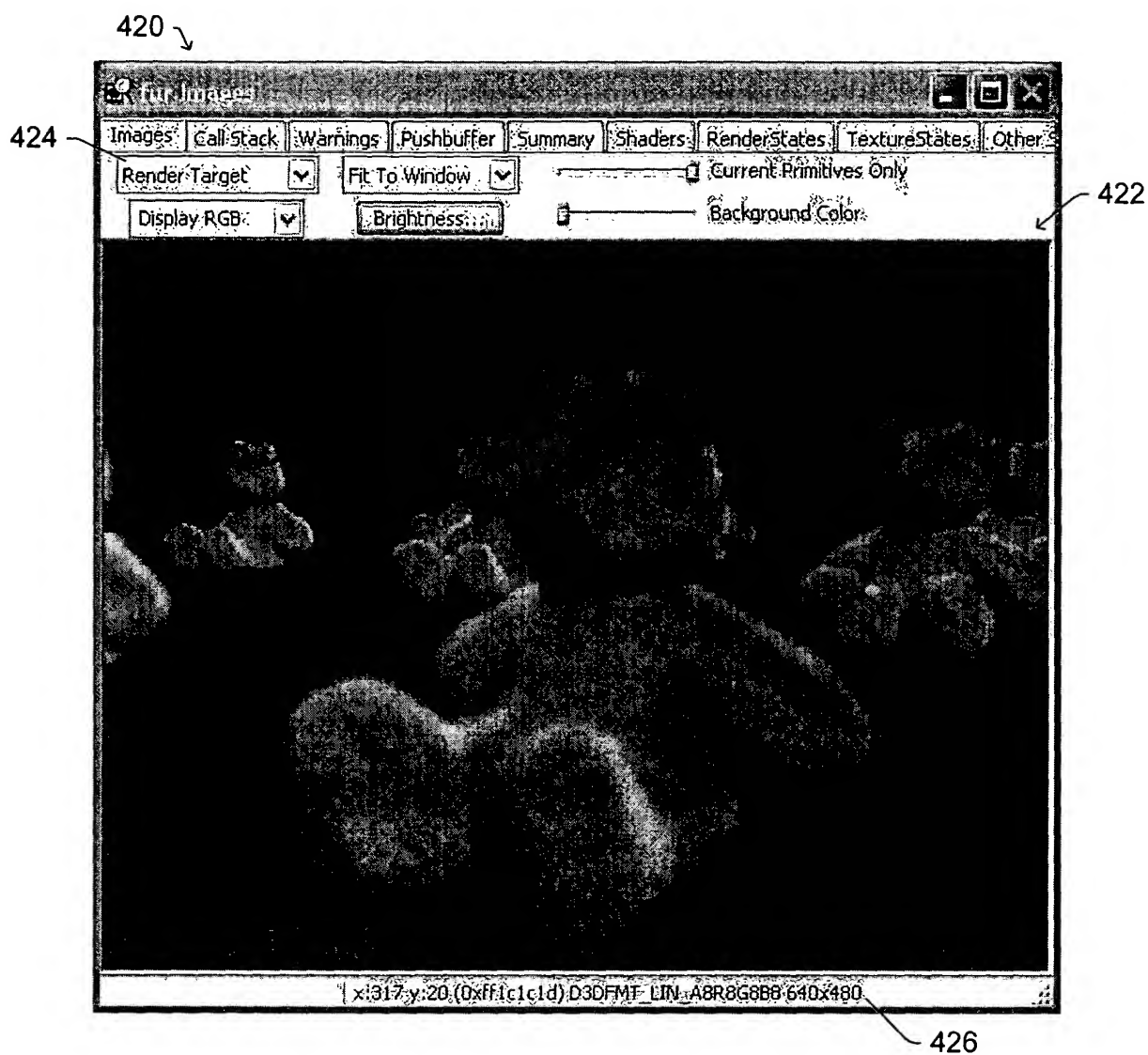
Fig. 8

400 ↘

fur Events								
Event	ID	CPU Start (ns)	CPU Duration (ns)	GPU Start (ns)	GPU Duration (ns)	% of Total Time	Back-end Time (ns)	Setup Time (ns)
KickPushBuffer	0	0	14,449	-	-	-	-	-
FrameMove	1	36,612	101,750	-	0	-	-	-
Clear	3	144,537	4,698	15,745,863	48,640	-	-	-
Begin/End	4	181,781	29,929	15,794,503	331,584	-	-	-
Bear Mesh 0								
DrawIndexedVertices	6	252,563	125,782	16,126,087	278,176	-	-	-
KickPushBuffer	7	339,091	5,501	-	-	-	-	-
KickPushBuffer	8	374,790	3,385	-	-	-	-	-
DrawIndexedVertices	9	386,209	10,399	16,404,263	3,072	-	-	-
DrawIndexedVertices	10	401,332	6,393	16,407,335	2,656	-	-	-
Bear Mesh 1	11	409,555	56,960	16,409,991	45,568	-	-	-
Bear Mesh 2	15	466,773	39,522	16,455,559	74,208	-	-	-
Bear Mesh 3	19	506,536	91,996	16,529,767	59,072	-	-	-
Bear Mesh 4	25	598,778	53,437	16,588,839	47,232	-	-	-
Bear Mesh 5	29	652,769	39,348	16,636,071	47,552	-	-	-
Bear Mesh 6	33	692,356	37,207	16,683,623	45,248	-	-	-
Bear Mesh 7	37	729,799	92,051	16,728,871	50,783	-	-	-
Bear Fur 7								
DrawFins	44	852,610	122,595	16,779,656	156,932	-	-	-
DrawShells	73	975,455	40,536	16,936,616	61,407	-	-	-
Bear Fur 6	75	1,019,798	117,933	16,998,024	219,011	-	-	-
Bear Fur 5	107	1,138,001	7,341,552	17,217,064	224,739	-	-	-
Bear Fur 4	142	8,479,990	164,020	17,441,832	284,642	-	-	-

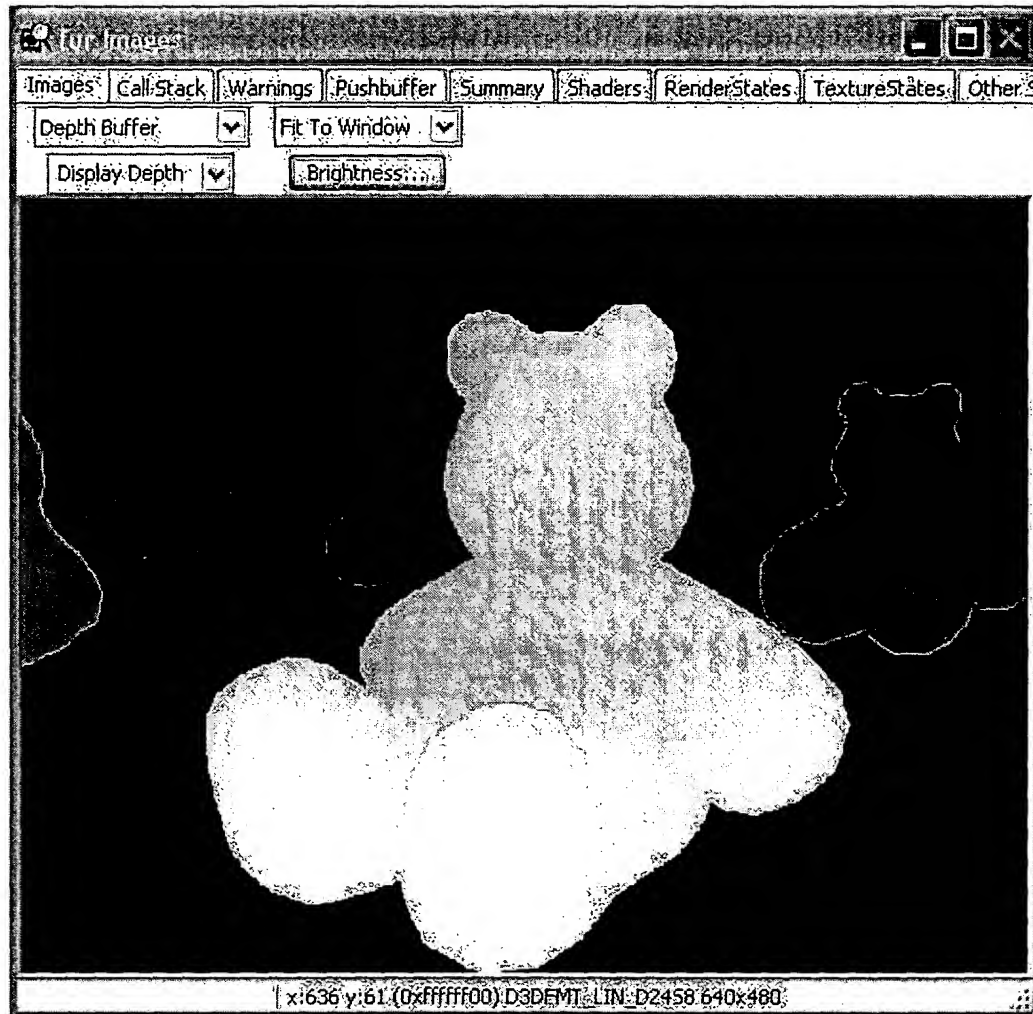
Fig. 9





*Fig. 10*

420 

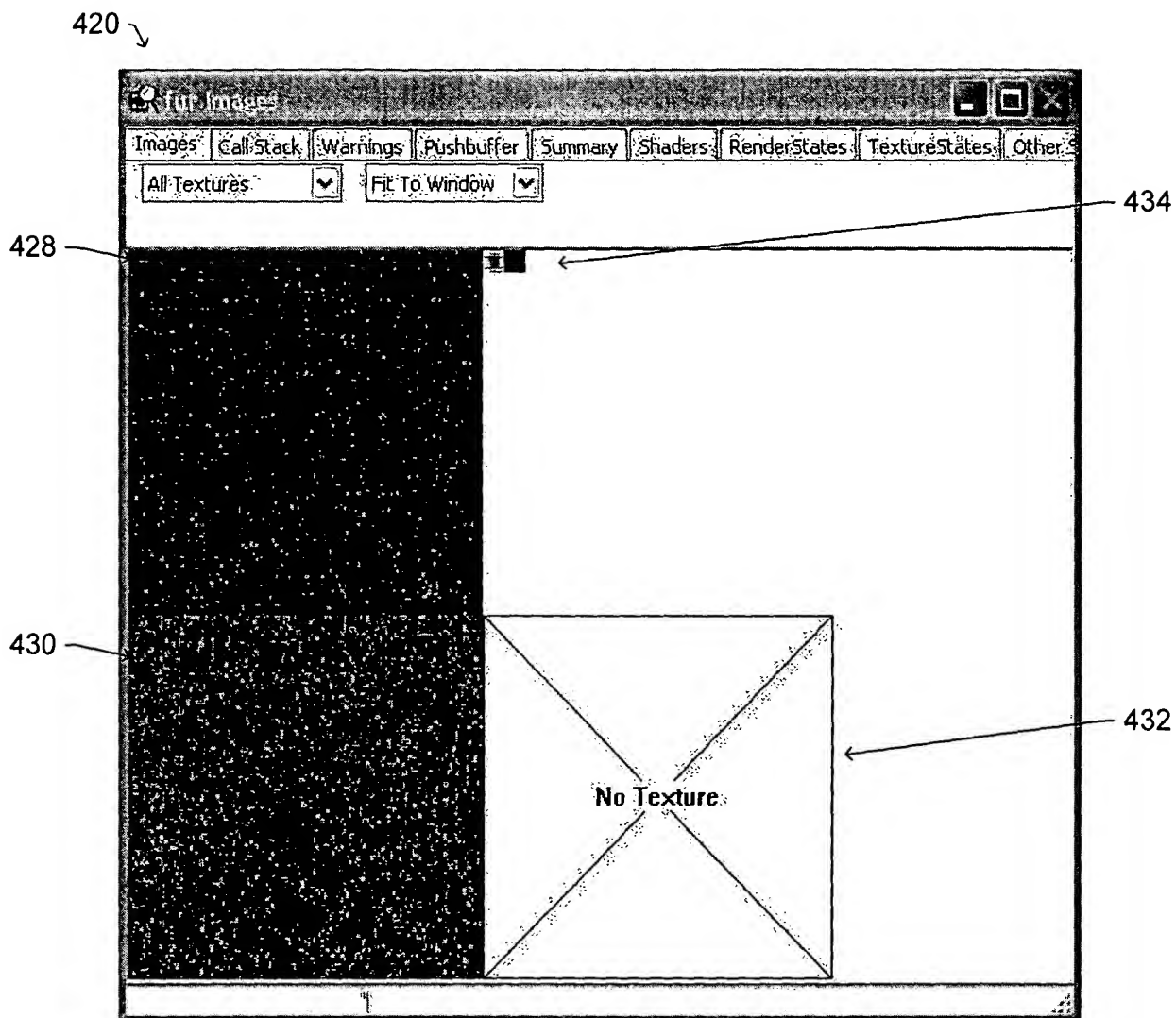


*Fig. 11*

420 ↘



*Fig. 12*



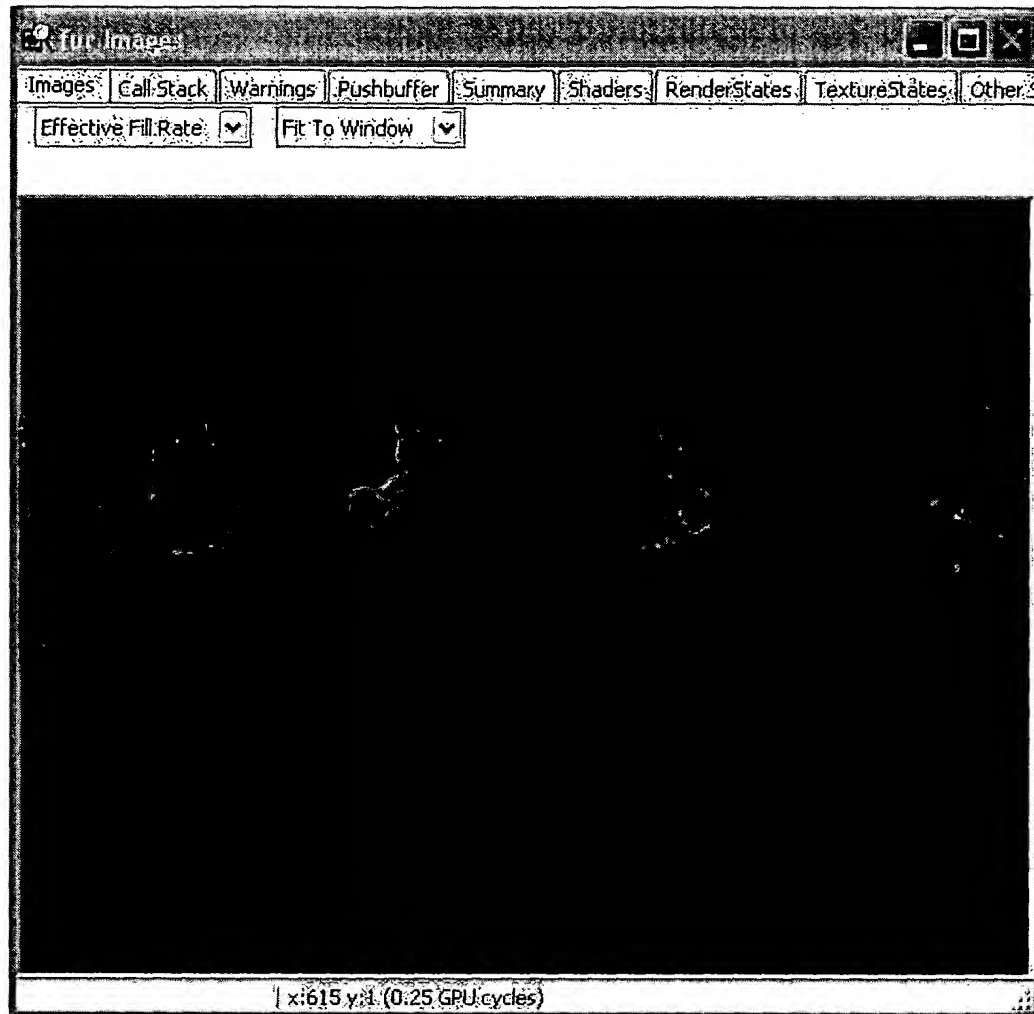
*Fig. 13*

420 ↘



*Fig. 14*

420 ↘



*Fig. 15*

450 ↘

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Pushbuffer Stack Trace			
<div> <div>Images</div> <div>Call Stack</div> <div>Warnings</div> <div>Pushbuffer</div> <div>Summary</div> <div>Shaders</div> <div>RenderStates</div> <div>TextureStates</div> <div>Other State</div> </div> <div> <div>Path to symbol file: c:\xboxbins\dump</div> <div>Browse</div> <div>Resolve Symbols</div> </div>			
Event	Symbol	Line	File
BlockOnObject	D3D::BlockOnTime	537	c:\xbox\private\windows\direct\dxg\vd3d8\se\pusher.cpp
	D3D::BlockOnNonSurfaceResource	1287	c:\xbox\private\windows\direct\dxg\vd3d8\se\pusher.cpp
	D3DFixup_Reset	1857	c:\xbox\private\windows\direct\dxg\vd3d8\se\pushres.cpp
	CXBoxSample::FrameMove	363	c:\xbox\private\atg\samples\graphics\pushbuffer\pushbuffer.cpp
	CXBoxApplication::Run	294	c:\xbox\private\atg\samples\common\src\xbapp.cpp
	main	108	c:\xbox\private\atg\samples\graphics\pushbuffer\pushbuffer.cpp
Clear	mainXapiStartup	54	c:\xbox\private\ntos\xapi\dl\xapi0.c
	D3DDevice_Clear	74	c:\xbox\private\windows\direct\dxg\vd3d8\se\clear.cpp
	CXBoxSample::Render	383	c:\xbox\private\atg\samples\graphics\pushbuffer\pushbuffer.cpp
	main	108	c:\xbox\private\atg\samples\graphics\pushbuffer\pushbuffer.cpp
RunPushBuffer	mainXapiStartup	54	c:\xbox\private\ntos\xapi\dl\xapi0.c
	D3DDevice_RunPushBuffer	122	c:\xbox\private\windows\direct\dxg\vd3d8\se\pushres.cpp
	CXBoxSample::Render	386	c:\xbox\private\atg\samples\graphics\pushbuffer\pushbuffer.cpp
	main	108	c:\xbox\private\atg\samples\graphics\pushbuffer\pushbuffer.cpp
DrawVerticesUP	mainXapiStartup	54	c:\xbox\private\ntos\xapi\dl\xapi0.c
	DrawVertices		
Begin/End	D3DDevice_Begin	1195	c:\xbox\private\windows\direct\dxg\vd3d8\se\drawprim.cpp
	CXFont::Begin	448	c:\xbox\private\atg\samples\common\src\xbfont.cpp
	CXBoxSample::Render	387	c:\xbox\private\atg\samples\graphics\pushbuffer\pushbuffer.cpp
	main	108	c:\xbox\private\atg\samples\graphics\pushbuffer\pushbuffer.cpp
	mainXapiStartup	54	c:\xbox\private\ntos\xapi\dl\xapi0.c

Fig. 16

460

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ID	Event	Priority	Message
3	Clear	3	If all redundant state setting were perfectly eliminated, rendering of entire scene would be 0.
		2	The CPU's floating point precision is set to 53 bits. Consider calling _controlfp(_PC_24, _MC...
4	Begin/End	3	Vertex shader is writing to 9 output registers that are unused by the current pixel shader.
		3	To make best use of pixel pipelines and swathing, use a single clipped triangle that covers th
74	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
106	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
138	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
173	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
206	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
210	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
243	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
247	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
280	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
282	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
284	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
288	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
321	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
325	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
329	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
333	DrawIndexedVertices	3	Vertex shader is writing to 1 output registers that are unused by the current pixel shader.
336	Begin/End	2	D3DPRESENT_INTERVAL_ONE_OR_IMMEDIATE and D3DPRESENT_INTERVAL_TW

Fig. 17

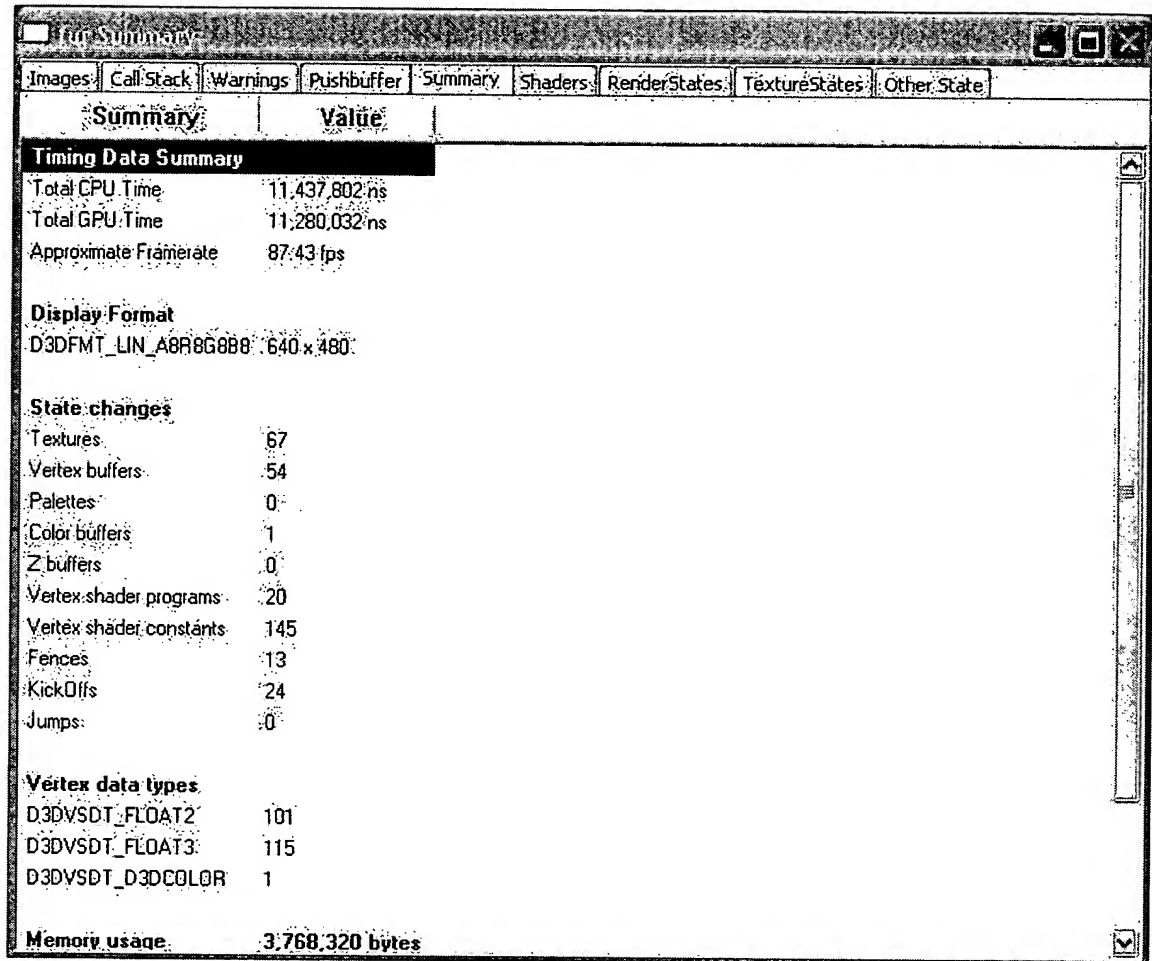


464 ↘

Pushbuffer Disassembly			
Images   Call Stack   Warnings   Pushbuffer   Summary   Shaders   Render States   Texture States   Other State			
Event	Pushbuffer	Size	Attributes
BlockOnObject			
Clear	Clear(D3DCLEAR_TARGET   D3DCLEAR_ZBUFFER   D3DCLEAR_STENCIL)	28	
RunPushBuffer			
DrawVerticesUP	D3DRS_PSCOMBINERCOUNT	8	Redundant
	D3DRS_PSRGBINPUTS*	36	Redundant
	D3DRS_PSRGBOUTPUTS*	36	Redundant
	D3DRS_PSALPHAINPUTS*	36	Redundant
	D3DRS_PSALPHAOUTPUTS*	36	Redundant
	LazySetShaderStageProgram	8	Redundant
	SetVertexShaderConstant	44	
	SetVertexShader/SelectVertexShader	208	
	LazySetSpecFogCombiner	8	Redundant
	D3DRS_PSFINALCOMBINERINPUTSABCD	8	
	D3DRS_PSFINALCOMBINERINPUTSEFG	4	
	LazySetState/SetVertexShaderInput	100	
	Jump	4	
	D3DRS_CULLMODE	8	
	D3DRS_ALPHABLENDENABLE	532	
	SetVertexShaderConstant	76	
	SetVertexShader/SelectVertexShader	136	
	CommonSetViewport	52	Redundant
	SetVertexShader/SelectVertexShader	8	Redundant
	D3DRS_PSCOMBINERCOUNT	8	
	D3DRS_PSRGBINPUTS*	36	
	D3DRS_PSRGBOUTPUTS*	36	
	D3DRS_PSALPHAINPUTS*	36	

Fig. 18

468 ↘



Summary	Value
<b>Timing Data Summary</b>	
Total CPU Time	11,437,802 ns
Total GPU Time	11,280,032 ns
Approximate Frame rate	87.43 fps
<b>Display Format</b>	
D3DFMT_LIN_A8R8G8B8	640 x 480
<b>State changes</b>	
Textures	67
Vertex buffers	54
Palettes	0
Color buffers	1
Z buffers	0
Vertex shader programs	20
Vertex shader constants	145
Fences	13
KickOffs	24
Jumps	0
<b>Vertex data types</b>	
D3DVSDT_FLOAT2	101
D3DVSDT_FLOAT3	115
D3DVSDT_D3DCOLOR	1
<b>Memory usage</b>	3,768,320 bytes

*Fig. 19*

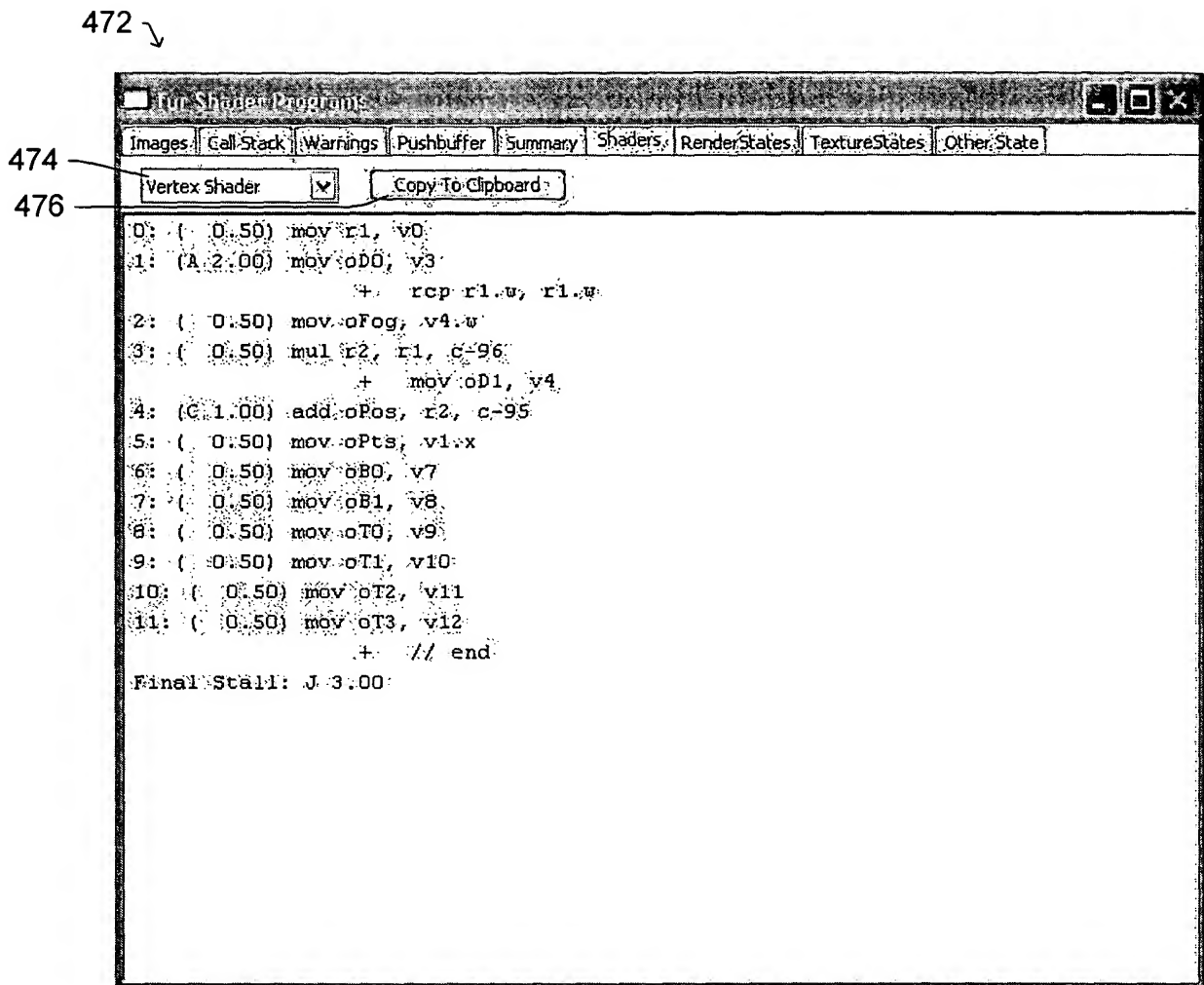
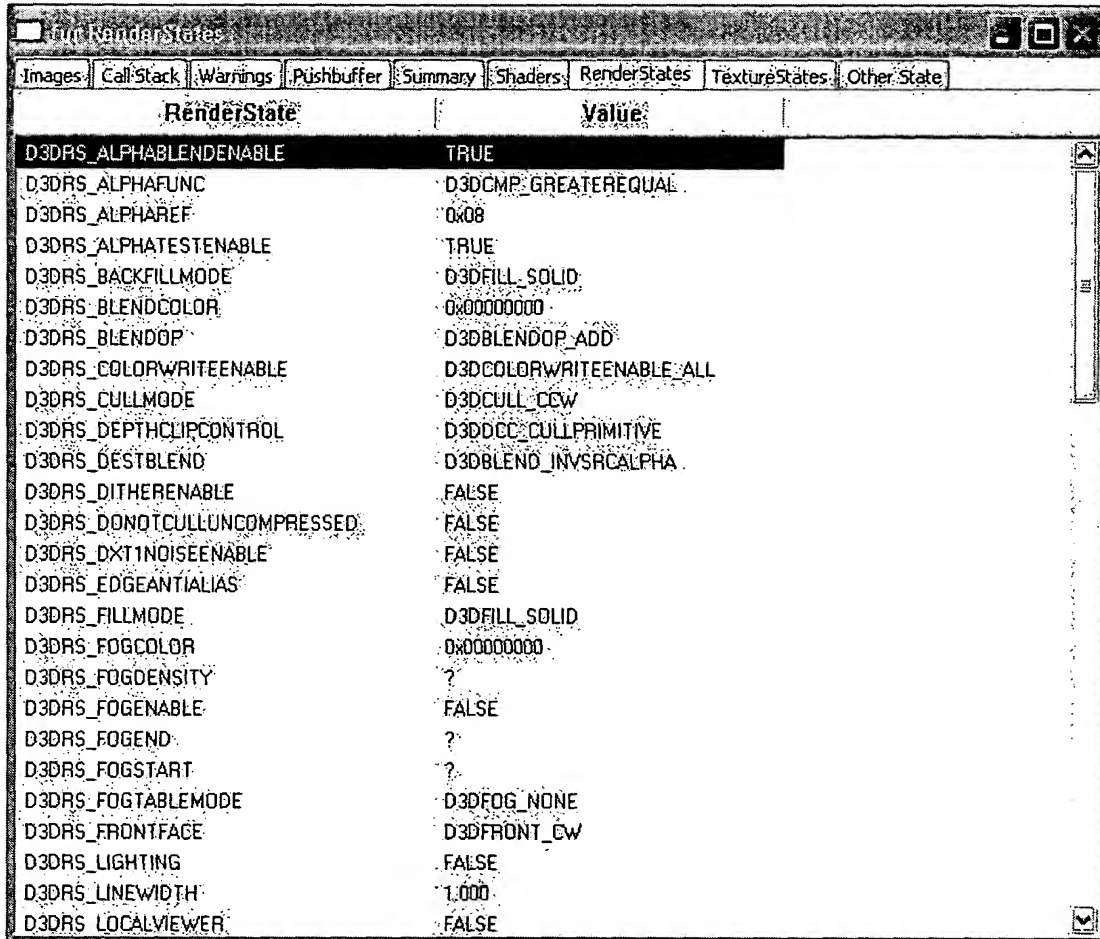


Fig. 20

480 ↘



The screenshot shows a window titled "RenderStates" with a tabbed interface. The "RenderStates" tab is selected. The window displays a list of render states and their corresponding values.

RenderState	Value
D3DRS_ALPHABLENDENABLE	TRUE
D3DRS_ALPHAFUNC	D3DCMP_GREATEREQUAL
D3DRS_ALPHAREF	0x08
D3DRS_ALPHATESTENABLE	TRUE
D3DRS_BACKFILLMODE	D3DFILL_SOLID
D3DRS_BLENDCOLOR	0x00000000
D3DRS_BLENDOP	D3DBLENDOP_ADD
D3DRS_COLORWRITEENABLE	D3DCOLORWRITEENABLE_ALL
D3DRS_CULLMODE	D3DCULL_CCW
D3DRS_DEPTHCLIPCONTROL	D3DDCC_CULLPRIMITIVE
D3DRS_DESTBLEND	D3DBLEND_INVSRCALPHA
D3DRS_DITHERENABLE	FALSE
D3DRS_DONOTCULLUNCOMPRESSED	FALSE
D3DRS_DXT1NOISEENABLE	FALSE
D3DRS_EDGEANTIALIAS	FALSE
D3DRS_FILLMODE	D3DFILL_SOLID
D3DRS_FOGCOLOR	0x00000000
D3DRS_FOGDENSITY	?
D3DRS_FOGENABLE	FALSE
D3DRS_FOGEND	?
D3DRS_FOGSTART	?
D3DRS_FOGTABLEMODE	D3DFOG_NONE
D3DRS_FRONTFACE	D3DFRONT_CW
D3DRS_LIGHTING	FALSE
D3DRS_LINEWIDTH	1.000
D3DRS_LOCALVIEWER	FALSE

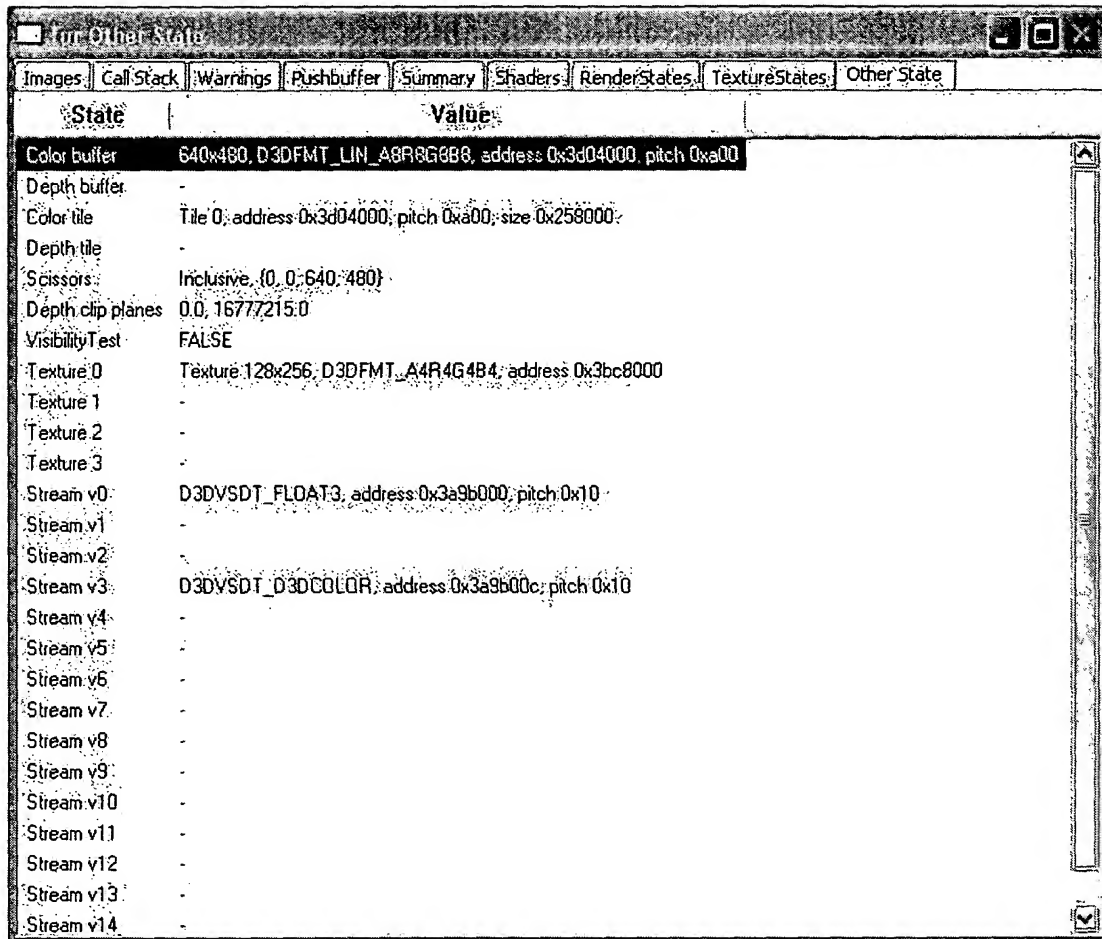
Fig. 21

484 ↘

Texture State		Value
Texture Unit 0		
D3DTSS_ADDRESSU		D3DADDRESS_WRAP
D3DTSS_ADDRESSV		D3DADDRESS_WRAP
D3DTSS_ADDRESSW		D3DADDRESS_WRAP
D3DTSS_ALPHAKILL		D3DTALPHAKILL_DISABLE
D3DTSS_BORDERCOLOR		0x00000000
D3DTSS_BUMPENVLOFFSET		-
D3DTSS_BUMPENVLSCALE		-
D3DTSS_BUMPENVMAT00		-
D3DTSS_BUMPENVMAT01		-
D3DTSS_BUMPENVMAT10		-
D3DTSS_BUMPENVMAT11		-
D3DTSS_COLORKEY		0x00000000
D3DTSS_COLORKEYOP		D3DCOLORKEYOP_DISABLE
D3DTSS_COLORSIGN		0
D3DTSS_MAGFILTER		D3DTEXF_LINEAR
D3DTSS_MAXANISOTROPY		0
D3DTSS_MAXMIPLEVEL		0
D3DTSS_MINFILTER		D3DTEXF_LINEAR
D3DTSS_MIPFILTER		D3DTEXF_LINEAR
D3DTSS_MIPMAPLODBIAS		0.000
D3DTSS_TEXCOORDINDEX		?
D3DTSS_TEXTURETRANSFORMFLAGS		?
Texture Unit 1		
D3DTSS_ADDRESSU		D3DADDRESS_WRAP

Fig. 22

488 ↘



The screenshot shows a software window titled "Other State" with a tabbed interface. The "Other State" tab is selected, displaying a list of GPU state variables and their values. The window has standard Windows-style controls (minimize, maximize, close) in the top right corner. The list of state variables includes buffers, tiles, scissoring settings, clip planes, visibility test, textures, and vertex streams.

State	Value
Color buffer	640x480, D3DFMT_LIN_A8R8G8B8, address 0x3d04000, pitch 0xa00
Depth buffer	-
Color tile	Tile 0, address 0x3d04000, pitch 0xa00, size 0x258000
Depth tile	-
Scissors	Inclusive, {0, 0, 640, 480}
Depth clip planes	0.0, 16777215.0
VisibilityTest	FALSE
Texture 0	Texture 128x256, D3DFMT_A4R4G4B4, address 0x3bc8000
Texture 1	-
Texture 2	-
Texture 3	-
Stream v0	D3DVSDT_FLOAT3, address 0x3a9b000, pitch 0x10
Stream v1	-
Stream v2	-
Stream v3	D3DVSDT_D3DCOLOR, address 0x3a9b00c, pitch 0x10
Stream v4	-
Stream v5	-
Stream v6	-
Stream v7	-
Stream v8	-
Stream v9	-
Stream v10	-
Stream v11	-
Stream v12	-
Stream v13	-
Stream v14	-

*Fig. 23*

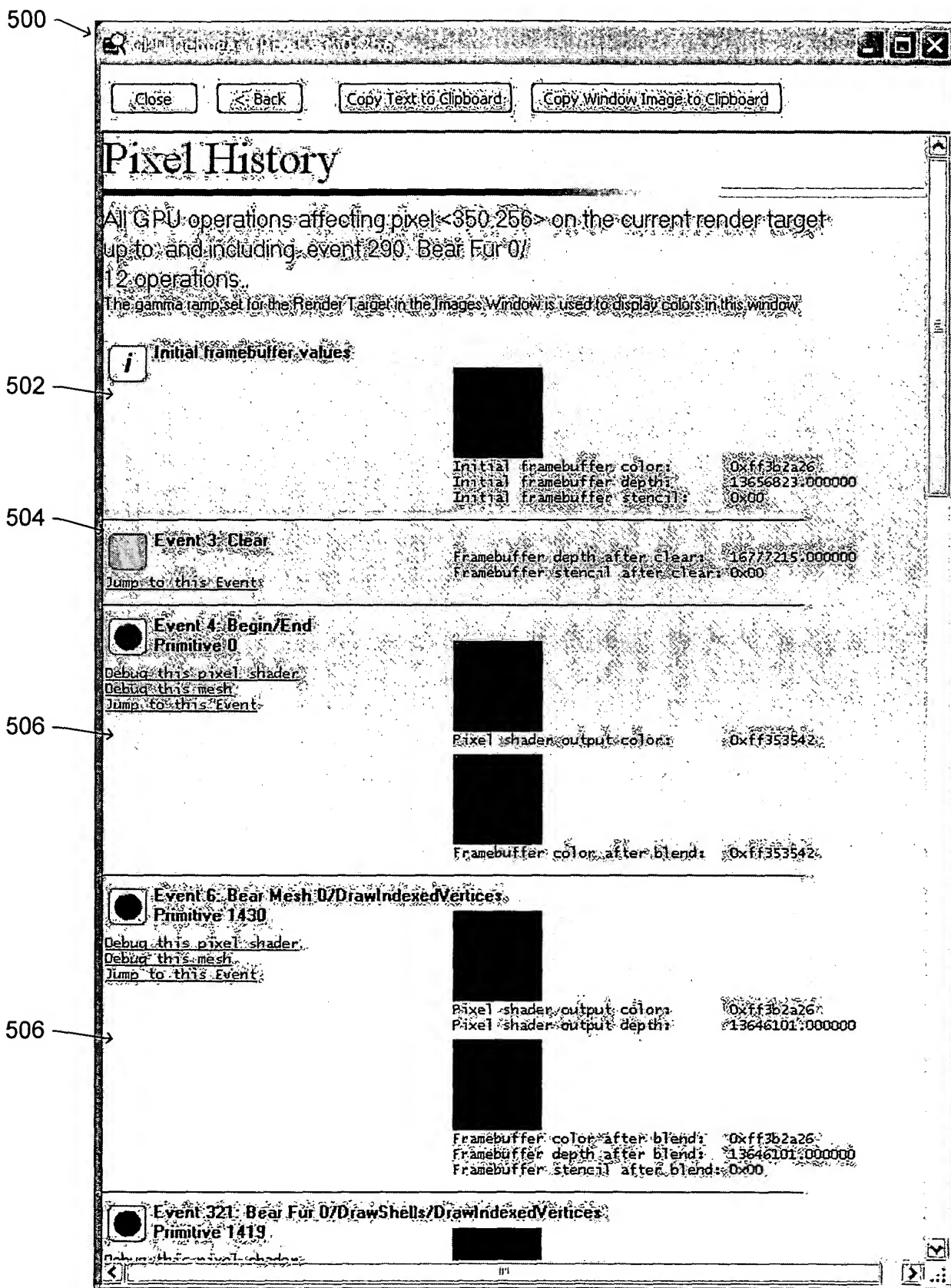
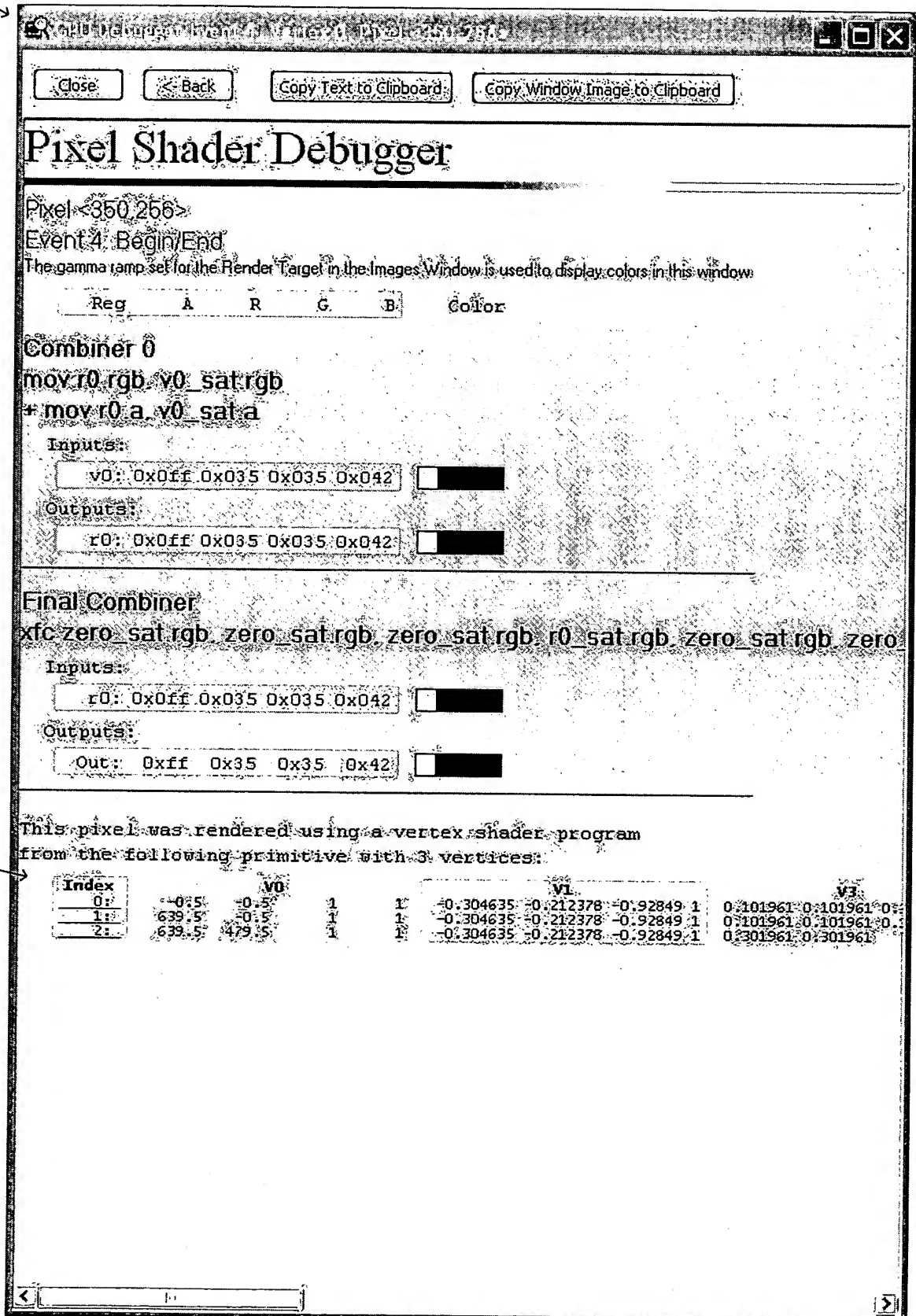


Fig. 24

520 →



522 →

Fig. 25



540 ↘

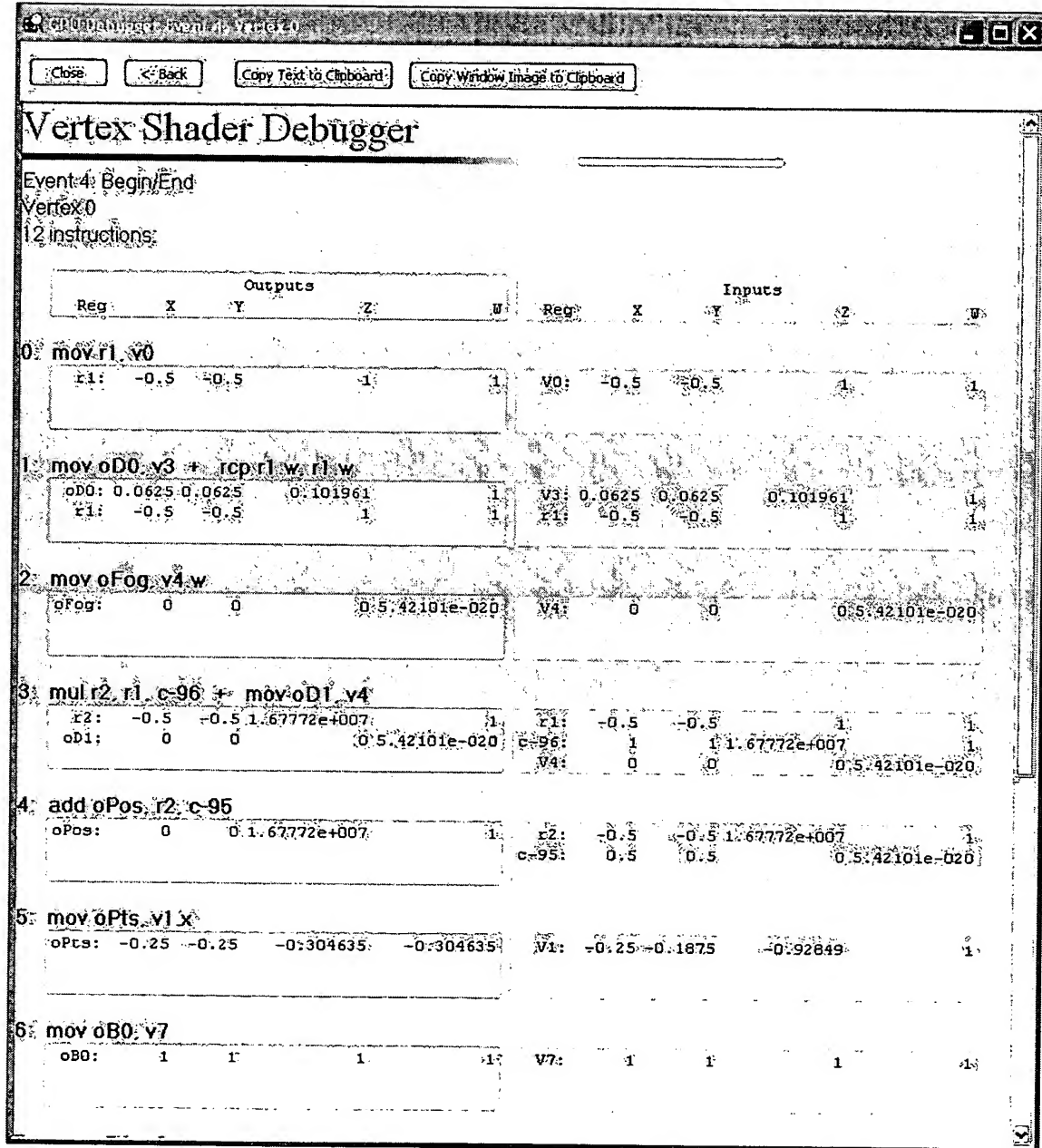
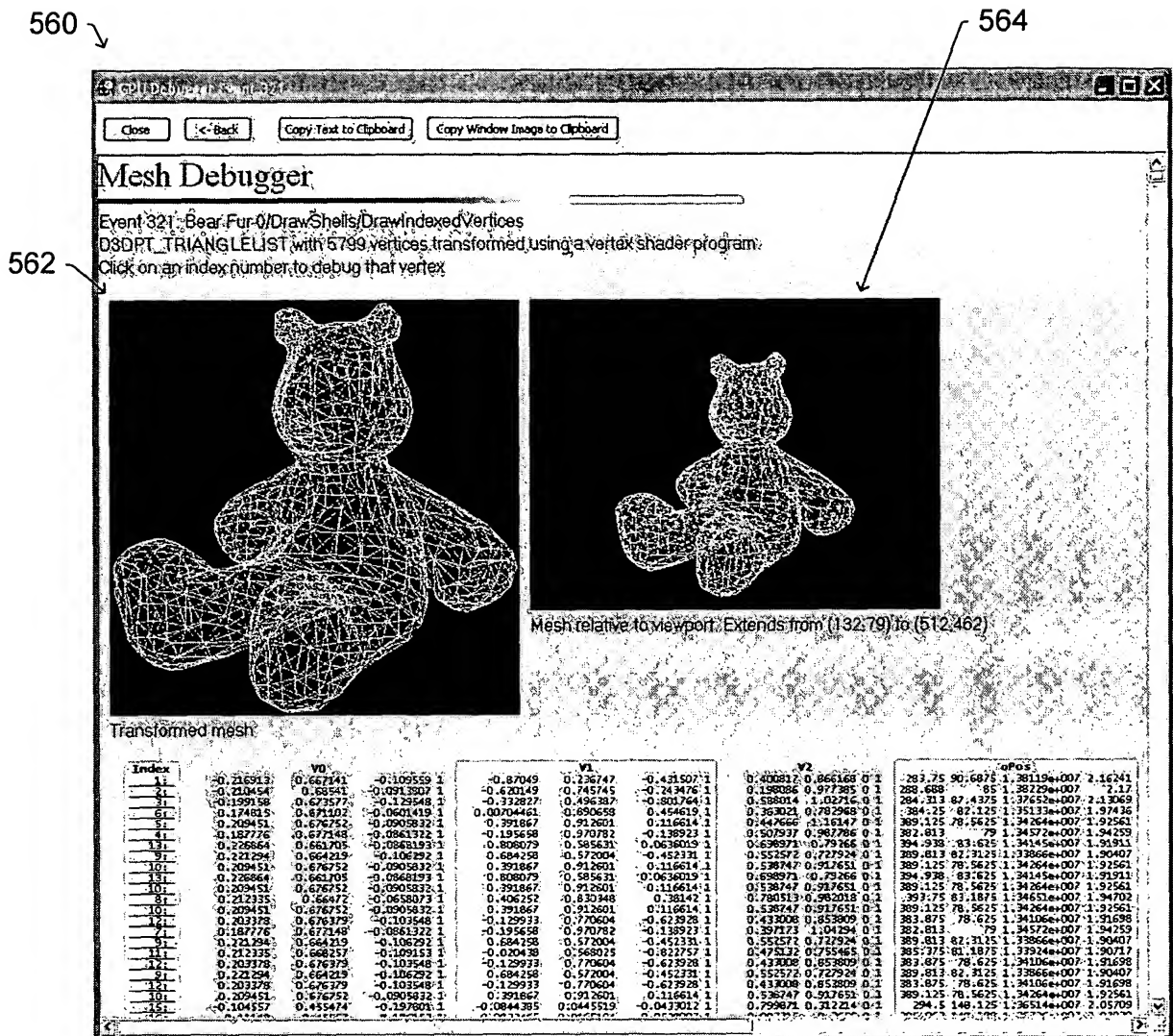


Fig. 26



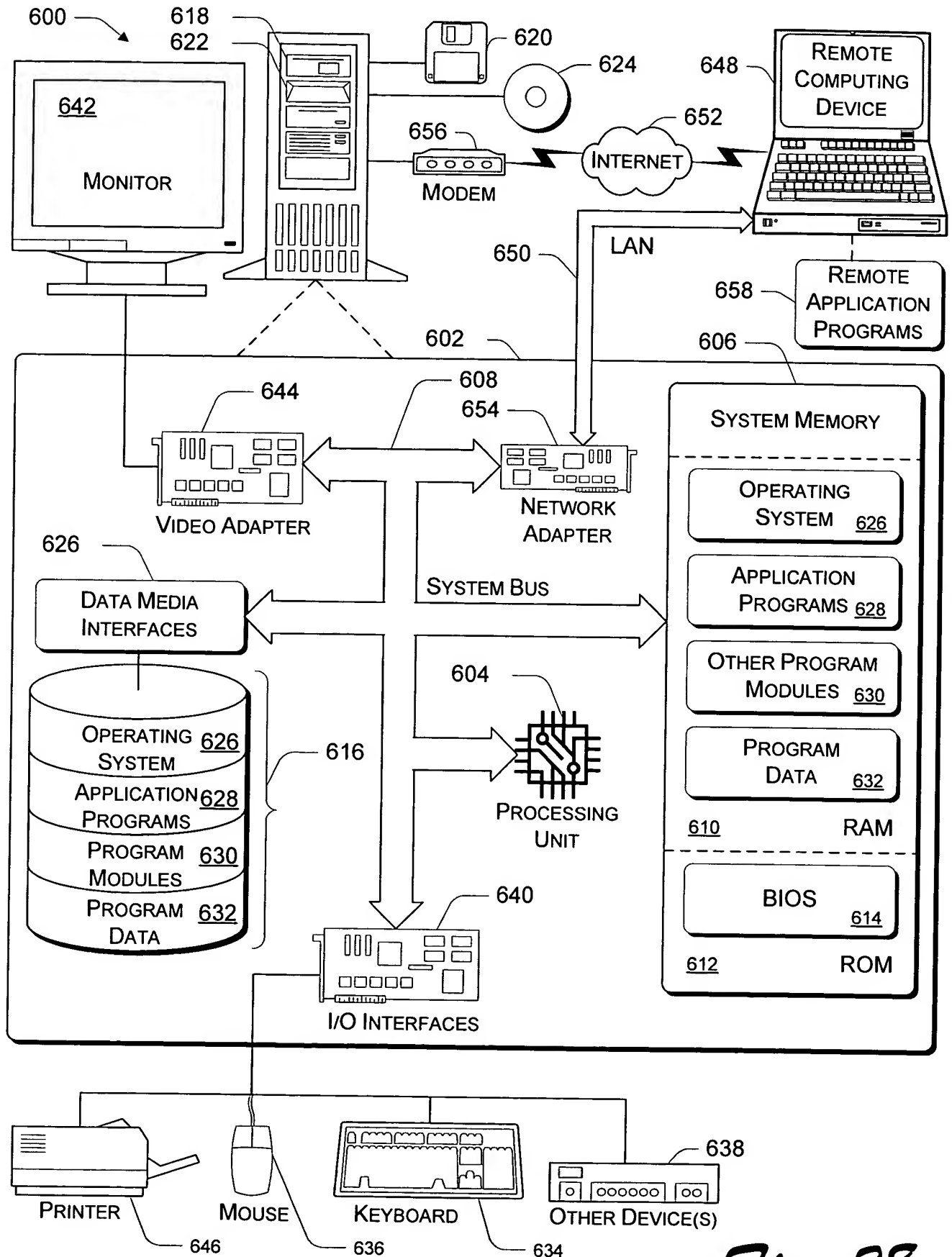


Fig. 28